

Work Order ID 50829

July 23, 2009 7:35:53 AM

Page 1

Item ID: D205-634-041

Accept

Revision ID: D

Item Name: Replacement Skidtube

Start Date: 07/23/2009 Start Qty: 1.00

Required Date: 07/31/2009 Req'd Qty: 1.00

Cust Item ID:

Customer:

Reference:

Approvals: Process Plan: *mk* Date: *09-07-23* Tooling:

QC: Date: SPC (Y/N): Date:

Run Start

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
D2580	Rev D

100 0.00



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy D205-634 bluefile & type labels per PPP D205-634-041 CHG002

N/A

*used on -011
51019*

110 0.00



BENDING MACHINE - SKIDTUBES

CNC Bend 1

Memo

0.00

CNC Delta 100 Bender

1-Bend as per program D2580.C on CNC Bender and Folio FT009

2-Cut tubes as per Dwg. D2580

} K 9-7-23

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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NOTE: Date & initial all entries

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July 23, 2009 7:35:53 AM



Page 2

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Setup Start



Revision ID: D

Stop



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Customer:

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Run Start



QC: Date: SPC (Y/N): Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	----------------	--------------	--------------	---------------	---------------	------------------	----------------

120

0.00



Skidtubes

Memo

0.00

Skidtubes

1- Deburr ends

2- C'sink holes as per dwg without cutting fluid

3- Prepare tube for welding, remove alodine as required.

4- Scribe batch number insied aft end of tube.

1 ~~0~~ - AWM9-7-23

130

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

=> See 07/23

⊕ ⊕

W/O:		WORK ORDER CHANGES					
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Process Plan:

Date:

Tooling:

Date:

Stop



QC:

Date:

SPC (Y/N):

Date:

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

140

0.00



Skidtubes

Memo

0.00

Skidtubes

1-Weld step D2576 as per Dwg. D2580 and QSI 004
A/R() Aluminum Rod *mill 79*

BE 09/07/24

2-Prep per QSI 005 and weld crossbolt spacers D2579 as per Dwg. D2580, QSI 004.

For D2579 spacers, weld one side, pass 3/8" drill, weld other side, pass 3/8" drill
A/R() Aluminum Rod *mill 79*

BE 09/07/24

3-Grind welds as per Dwg D2580 Grind flush ridge made from bending

4-Drill holes for wearplates using DT 8217 & DT8937 Open holes to 19/64", adjust stopper not to hit web. Deburr

5-Counterbore crossbolt spacers to 7/16" ID x 1.0" deep as per Dwg D2580. Deburr holes

6-Drill pilot holes for aft cap using DT 8215 Open holes to 0.208". Deburr

7-Drill pilot holes for Tow ring using DT8091, open to .640" and Deburr

9-7-28

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Page 4

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Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

150

QC10- Inspect visual per QSI004- ground welds

0.00

=> 8 02/07/09

①

φ

QC

Memo

0.00

Quality Control

160

QC5- Inspect part completeness to step on W/O

0.00

=> 8 02/07/09

①

φ

QC

Memo

0.00

Quality Control

170

Pressure Wash per QSI005 4.3

0.00

pk 02-07-29

①.

HandFinish

Memo

0.00

Hand Finishing

W/O:		WORK ORDER CHANGES					
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Page 5

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Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run

Start

Stop

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

180

White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum

0.00



Powdercoat

Memo

0.00

Powder Coating

START TIME:

10:30AM

OVEN TEMPERATURE:

320°F

FINISH TIME:

11:00AM

M112140

09-07-29 XC

24

190

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control

BR

09-07-31

⑦

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Page 6

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Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

200

0.00



HandFinish

Memo

0.00

Hand Finishing

1-Install inserts & wearplates & Gaskets as per Dwg. D2580. Use a drop of Sikaflex on insert holes before installing wearplates
A/R ☐ ☐ ☐ Sikaflex-291 M111557
Sikaflex expire date: 10/01

2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as per Dwg D2580

3-Inspect for foreign object per QSI 024

4-Install 2855 Aft Cap as per Dwg D2580 and seal Fwd Step & Aft Cap with Sikaflex. Clean excess adhesive
A/R ☐ ☐ ☐ Sikaflex-291 M111557
Sikaflex expire date: 10/01

5-Wing Walk as per Dwg D2580 and QSI 005 4.4
Batch: M111013

BR 09-07-31

BR 09-07-31

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July 23, 2009 7:35:53 AM

Page 7

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Required Date: 07/31/2009 Req'd Qty: 1.00

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start

QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

210

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

Inspect Aft Cap, Fwd Step and Wing Walk of work to Current Step Inspect for Foreign objects per QSI 024

⇒ 507/05/31

220

Packaging

0.00



Packaging

Memo

0.00

Packaging

Identify and pack for shipping as per PPPD205-634-041

Location:

PPP Rev:

PPP 51019

129/7/310

230

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

165-5814

W. 9-58-04

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Picklist Print

July 23, 2009 7:35:52 AM

Page 1 19

Work Order ID: 50829

Parent Item: D205-634-041RevD

Parent Item Name: Replacement Skidtube

Comments:

Start Date: 07/23/2009

Required Date: 07/31/2009

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
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D2580-1RevD

Manufactured

No

110

Each

1.0000

1.0000



205 Skidtube bent detail

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

1

48616

1

D2576-3RevG

Manufactured

No

140

Each

168.0000

1.0000



Step (maching detail)

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

168

43504

65

46661

103

D2579RevE

Manufactured

No

140

Each

512.0000

20.0000



Crossbolt Spacer

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

512

43988

4

46434

4

46956

12

47797

438

48272

54

B 50760 D
19-7-23

1 BE 9-7-24

20 BE 9-7-24

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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July 23, 2009 7:35:52 AM

Page 2 / 9

Work Order ID: 50829

Parent Item: D205-634-041RevD

Parent Item Name: Replacement Skidtube

Comments:

Start Date: 07/23/2009

Required Date: 07/31/2009

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D2855RevA		Manufactured	No			200	Each	15.0000	1.0000			
Cap												

Warehouse Loc Qty Loc Code

Location

Main Warehouse

ST

10360

35663

41340

42343

42806

15

2

7

1

3

2

200

Each

2,562.000

2.0000

AN3-5A

Bolt

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

100188

105057

15205

2562

246

2246

70

11707

2

BR 09-07-31.

July 23, 2009 7:35:52 AM

Shop Packet Print

Page 2

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July 23, 2009 7:35:52 AM

Page 3 / 9

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Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
AN960JD10L  Washer		Purchased	No			200	Each	7,073.000	2.0000			

Warehouse Loc Qty Loc Code
Location

Main Warehouse

ST	7157	
101291	16	
104885	153	
105793	236	
109632 ✓	1752	
110985	5000	

Main Warehouse

ST182	-84	
109632	-84	

ALS7-1032-130

Purchased

No

200

Each

3,850.000

50.0000

Insert

Warehouse Loc Qty Loc Code
Location

Main Warehouse

ST	3850	
108606	52	
111529	1798	
111779	2000	

110511

2 BL 09-07-31

50. BL 09-07-31

July 23, 2009 7:35:53 AM

Shop Packet Print

Page 3

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July 23, 2009 7:35:53 AM

Page 4 / 9

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AN3C4A 		Purchased	No			200	Each	152.0000	50.0000			
BOLT												

Warehouse Loc Qty Loc Code
Location

Main Warehouse

ST 112314 152
112082 152

50 07-07-31

AN960C10L 		Purchased	No			200	Each	4,758.000	50.0000			
washer												

Warehouse Loc Qty Loc Code
Location

Main Warehouse

ST 4758
103585 100
112116 ✓ 4658

50 07-07-31

July 23, 2009 7:35:53 AM

Shop Packet Print

Page 4

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<i>X</i> D3566-13RevC  Gasket		Manufactured	No			200	Each	32.0000	1.0000			

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
FP17	-1	
46889	-1	
Main Warehouse		
ST	33	
45717	1	
46889	6	
47435 ✓	8	
48166	18	

BR 09-07-31

D3566-5RevC  Gasket		Manufactured	No			200	Each	23.0000	1.0000			
--	--	--------------	----	--	--	-----	------	---------	--------	--	--	--

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
ST	23	
36113	1	
46186	1	
47318	1	
48167 ✓	20	

BR 09-07-31

W/O:		WORK ORDER CHANGES					
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Page 6 *5*

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---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	--------------------------	---------------	----------------	--------

D3566-1RevC

Manufactured

No

200

Each

24.0000

2.0000



Gasket

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

50278

2

BR 07-07-31

ST

24

46349

1

47434

2

48165

10

48557

11

D3564-11RevD

Manufactured

No

200

Each

21.0000

1.0000



Wearshoe

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

21

45823

1

47432 ✓

8

48553

12

1

BR 07-07-31

July 23, 2009 7:35:53 AM

Shop Packet Print

Page 6

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Page 7/9

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D3564-13RevD		Manufactured	No			200	Each	34.0000	1.0000			



Wearshoe

Warehouse Loc Qty Loc Code

Location

Main Warehouse

FP17

13

48554 ✓

13

Main Warehouse

ST

21

45409

3

46495

10

47867

8

D3564-9RevD

Manufactured No

200

Each

18.0000

1.0000



Wearshoe

Warehouse Loc Qty Loc Code

Location

Main Warehouse

ST

18

44659

1

45825

1

47316

4

48556 ✓

12

July 23, 2009 7:35:53 AM

Shop Packet Print

Page 7

1 Bl 09-07-31

1 Bl 09-07-31

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

July 23, 2009 7:35:53 AM

Page 8 / 9

Work Order ID: 50829

Parent Item: D205-634-041RevD

Parent Item Name: Replacement Skidtube

Comments:

Start Date: 07/23/2009

Required Date: 07/31/2009

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D3564-5RevD		Manufactured	No			200	Each	23.0000	1.0000			



Wearshoe

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
OFFSHORE		
FG	2	
34806	2	
Main Warehouse		
FP19	12	
48555	12	
Main Warehouse		
ST	9	
45824	1	
47433	1	
48164 ✓	7	

D2594-3RevC

Manufactured No

200

Each

918.0000

16.0000



O-Ring, 205 Skidtube

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
ST	918	
27168	44	
29908 ✓	874	

BR 07-07-31

16 BR 09-07-31

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

July 23, 2009 7:35:53 AM

Page 9 19

Work Order.ID: 50829



Parent Item: D205-634-041RevD



Parent Item Name: Replacement Skidtube

Start Date: 07/23/2009

Required Date: 07/31/2009

Comments:

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D2594-1RevC		Manufactured	No			200	Each	716.0000	16.0000			



Plug, 205 Skidtube



<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
ST	716	
42221	16	
42807	92	
43884 ✓	103	
46435	3	
47251	502	

16 Bk 09-07-31

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART

DESIGN <i>[Signature]</i>	DRAWN BY <i>RH</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D2580	REV. 1 SHEET 1 OF 1
DATE 07.02.27		TITLE 205 SKIDTUBE ASSEMBLY	
A	96.09.16	NEW ISSUE	
B	96.12.02	AS MANUFACTURED	
C	98.08.26	REDRAWN, INCLUDED DEO 9094/9097	
D	07.02.27	CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124/9183	

RELEASED
07-06-28 *[Signature]*

QTY -041	QTY -045	Part Number	Description
X		D2580-041	SKIDTUBE ASSEMBLY
	X	D2580-045	SKIDTUBE ASSEMBLY
1	1	D2500-1-190	EXTRUSION
1	1	D2576-3	STEP
20	24	D2579	CROSS BOLT SPACER
16	16	D2594-1	PLUG
16	16	D2594-3	O-RING
1	1	D2596	205 WEB
1	1	D2855	AFT CAP
1	1	D3564-5	WEARSHOE
1	1	D3564-9	WEARSHOE
1	1	D3564-11	WEARSHOE
1	1	D3564-13	WEARSHOE
2	2	D3566-1	GASKET
1	1	D3566-5	GASKET
1	1	D3566-13	GASKET
50	50	ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or AELS-1032-130	INSERT
50	50	AN3C4A	BOLT
2	2	AN3-5A	BOLT
50	50	AN960C10L	WASHER
2	2	AN960JD10L	WASHER

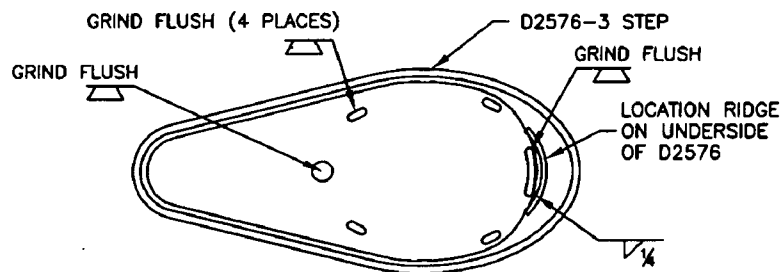
GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) ALL DIMENSIONS ARE IN INCHES
- 3) INSERT D2596 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 4) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 5) USE DART DRILL TEMPLATE TD2577-205 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION D-D (50 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND AN960C10L WASHERS WITH SIKAFLEX-241/-291.
- 6) WELDING TO BE DONE PER DART QSI 004.
- 7) FINISH:
SEE NOTES ON
PAGE 2 FOR D2580-041 AND
PAGE 3 FOR D2580-045
- 8) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (16 PLACES).

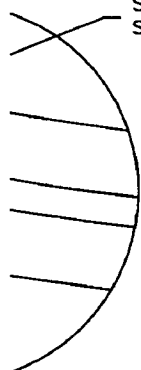
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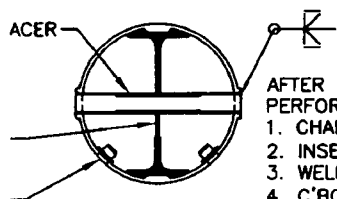
DETAIL B
SCALE 5:24



SEAL WITH
SIKAFLEX-241/-291

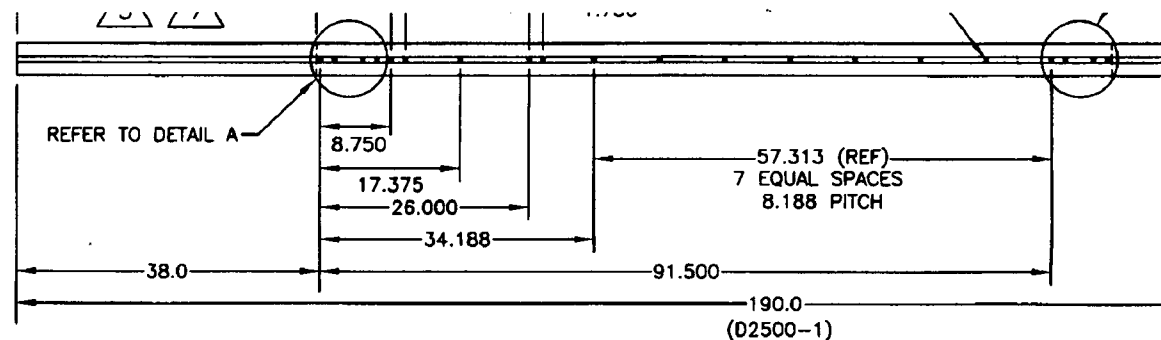


SECTION D-D
SCALE 5:24

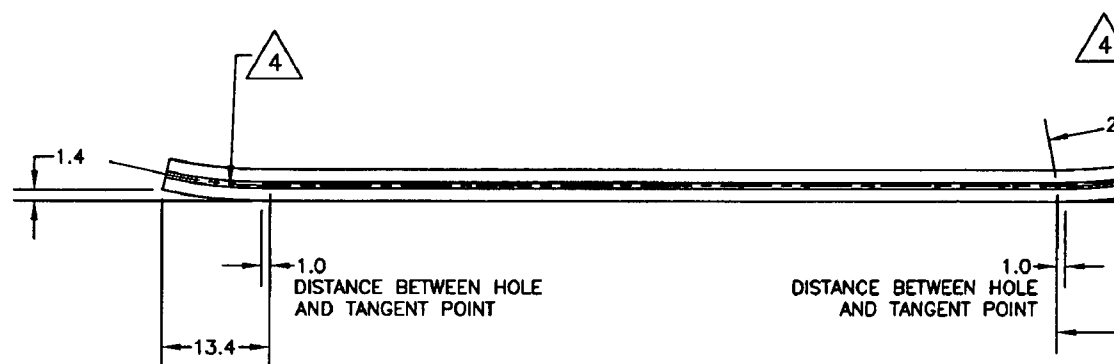


**AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:**

- 1. CHAMFER HOLE 0.050 X 45°**
- 2. INSERT D2579 SPACER (20 PLACES)**
- 3. WELD INTO PLACE AND GRIND FLUSH**
- 4. C'BORE D2579 SPACER TO Ø0.437 X 1.00 DEEP**

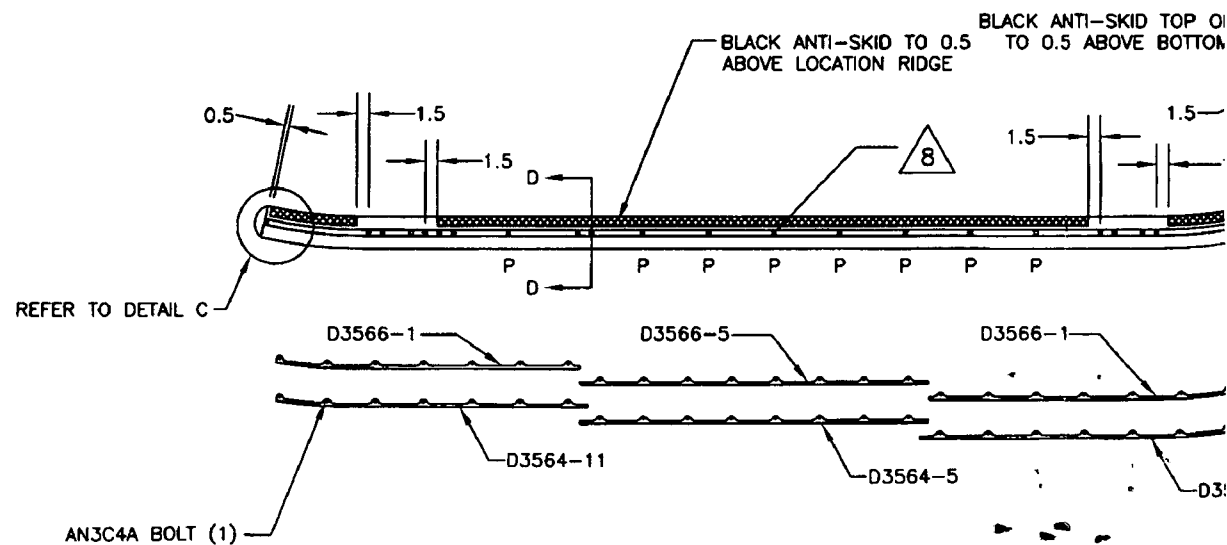


D2580-1 BENDING AND CUTTING DETAIL

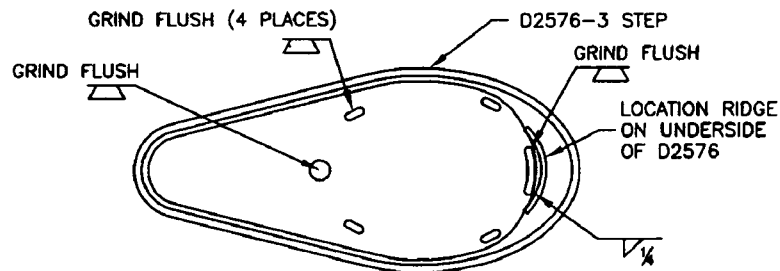


D2580-041 ASSEMBLY DETAIL

WELD AS PER D



DETAIL F
SCALE 5:24

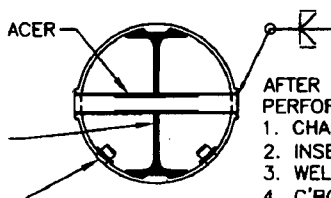


G
24

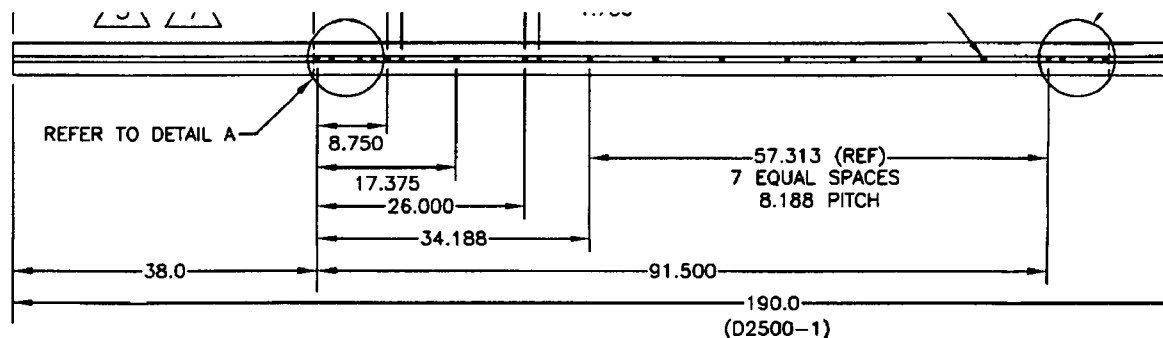
SEAL WITH
SIKAFLEX-241/-291

- SEE NOTE ii)

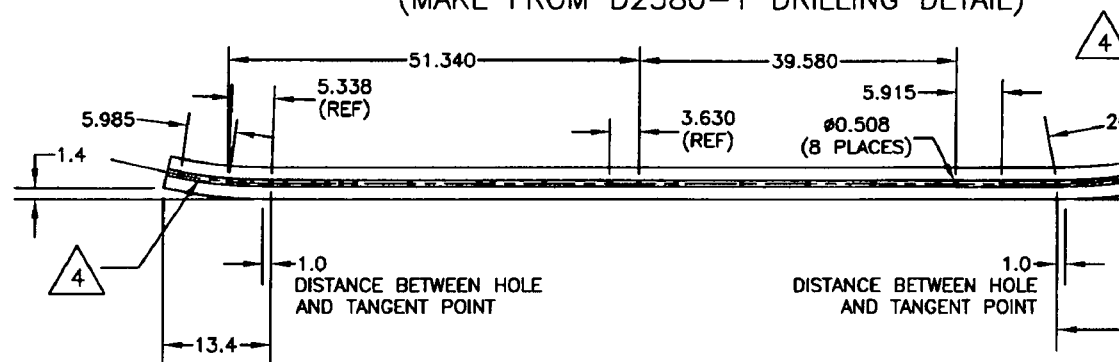
SECTION H-H
SCALE 5:24



- AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:**
- 1. CHAMFER HOLE 0.050 X 45°**
 - 2. INSERT D2579 SPACER (20 PLACES)**
 - 3. WELD INTO PLACE AND GRIND FLUSH**
 - 4. C'BORE D2579 SPACER TO Ø0.437 X 1.00 DEEP**

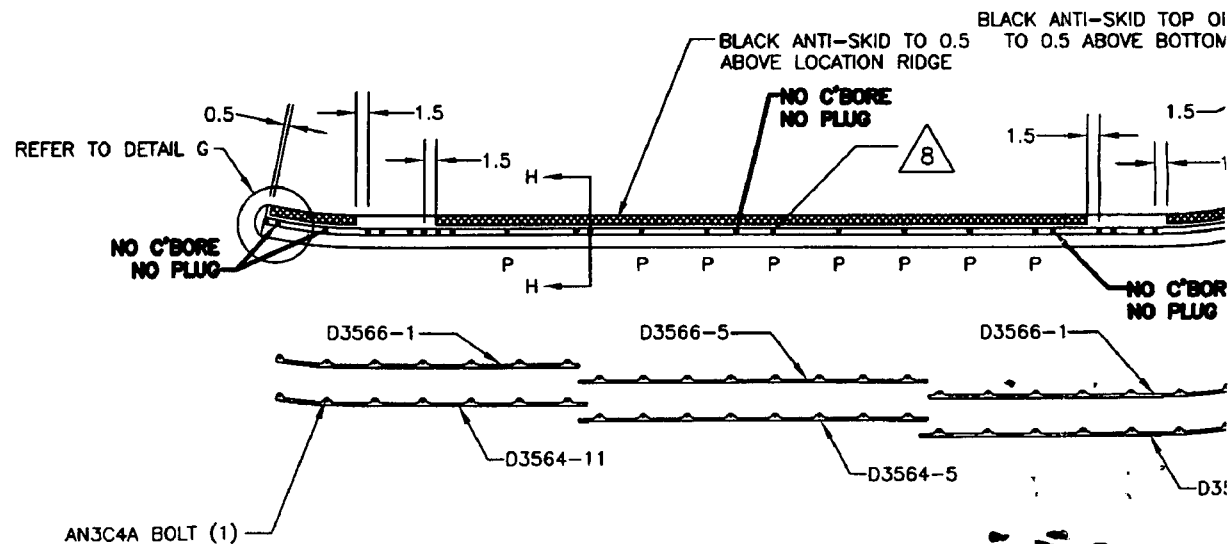


D2580-5 BENDING AND CUTTING DETAIL
(MAKE FROM D2580-1 DRILLING DETAIL)



D2580-045 ASSEMBLY DETAIL

WELD AS PER D



NO. 202

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Berkeley Elliott
Job number: 48448A
Part number: 5905134 041
Description: 205 skid tube
Welding Process: Tig[☒] Mig[]
Base material: Aluminum
Current: AC[☒] DC[]

TEST REQUIREMENTS AND RESULTS

Visual:
Penetration:

pass[☒] fail[]
pass[☒] fail[]

UNACCEPTABLE

Cracks:
Undercut:
Pin holes:
Overlap (cold lap)
Porosity (surface):
Coloration:

pass[☒] fail[]
pass[☒] fail[]
pass[☒] fail[]
pass[☒] fail[]
pass[☒] fail[]
pass[☒] fail[]

REFERENCE ONLY

Qualifier P. D. L. Date of Test Coupon 09-06-17
Welder Berkeley Elliott Date of Test Coupon 09-06-17

The above named individual is qualified in accordance with AWS D17.1.2001 to weld